

SEQUENCE LISTING

<110> Luche, Ralf M.
Wei, Bo

<120> DSP-12 AND DSP-13 DUAL-SPECIFICITY
PHOSPHATASES

<130> 200125.420

<140> US

<141> 2001-02-01

<160> 33

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 1949

<212> DNA

<213> Homo sapiens

<400> 1

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ggaactcaag	gaatttatag	acaatgagat	gctacttata	ttgggacaga	tggacaagcc	600
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tcaaaacctg	ctcaactcgg	agaacctaaa	caacaacagc	aagaggagct	gtcccaacgg	1560
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gatttttttc	tattgtctcc	tctgggcccc	cagctcccat	ctccagggac	ctgagggttc	1740
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tctgttggga ataacacata tctctgcaca ccattcttcac cccatgtacc ttattcatatc 1860
 cctgggcagg gcttccaact caatttcttt ttgtgtatgt aaaattaaaa catataattt 1920
 atcagccaaa aaaaaaaaaa aaaaaaaaaa 1949

<210> 2
 <211> 552
 <212> PRT
 <213> Homo sapien

<400> 2
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 20 25 30
 Val Ser Val Gln Ala Met Trp Ser Ala Leu Gln Val Leu His Lys Ala
 35 40 45
 Cys Glu Val Ala Arg Arg His Asn Tyr Phe Pro Gly Gly Val Ala Leu
 50 55 60
 Ile Trp Ala Thr Tyr Tyr Glu Ser Cys Ile Ser Ser Glu Gln Ser Cys
 65 70 75 80
 Ile Asn Glu Trp Asn Ala Met Gln Asp Leu Glu Ser Thr Arg Pro Asp
 85 90 95
 Ser Pro Ala Leu Phe Val Asp Lys Pro Thr Glu Gly Glu Arg Thr Glu
 100 105 110
 Arg Leu Ile Lys Ala Lys Leu Arg Ser Ile Met Met Ser Gln Asp Leu
 115 120 125
 Glu Asn Val Thr Ser Lys Glu Ile Arg Asn Glu Leu Glu Lys Gln Met
 130 135 140
 Asn Cys Asn Leu Lys Glu Leu Lys Glu Phe Ile Asp Asn Glu Met Leu
 145 150 155 160
 Leu Ile Leu Gly Gln Met Asp Lys Pro Ser Leu Ile Phe Asp His Leu
 165 170 175
 Tyr Leu Gly Ser Glu Trp Asn Ala Ser Asn Leu Glu Glu Leu Gln Gly
 180 185 190
 Ser Gly Val Asp Tyr Ile Leu Asn Val Thr Arg Glu Ile Asp Asn Phe
 195 200 205
 Phe Pro Gly Leu Phe Ala Tyr His Asn Ile Arg Val Tyr Asp Glu Glu
 210 215 220
 Thr Thr Asp Leu Leu Ala His Trp Asn Glu Ala Tyr His Phe Ile Asn
 225 230 235 240
 Lys Ala Lys Arg Asn His Ser Lys Cys Leu Val His Cys Lys Met Gly
 245 250 255
 Val Ser Arg Ser Ala Ser Thr Val Ile Ala Tyr Ala Met Lys Glu Phe
 260 265 270
 Gly Trp Pro Leu Glu Lys Ala Tyr Asn Tyr Val Lys Gln Lys Arg Ser
 275 280 285
 Ile Thr Arg Pro Asn Ala Gly Phe Met Arg Gln Leu Ser Glu Tyr Glu
 290 295 300
 Gly Ile Leu Asp Ala Ser Lys Gln Arg His Asn Lys Leu Trp Arg Gln
 305 310 315 320
 Gln Thr Asp Ser Ser Leu Gln Gln Pro Val Asp Asp Pro Ala Gly Pro
 325 330 335
 Gly Asp Phe Leu Pro Glu Thr Pro Asp Gly Thr Pro Glu Ser Gln Leu
 340 345 350

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Pro Phe Leu Asp Asp Ala Ala Gln Pro Gly Leu Gly Pro Pro Leu Pro
      355                      360                      365
Cys Cys Phe Arg Arg Leu Ser Asp Pro Leu Leu Pro Ser Pro Glu Asp
      370                      375                      380
Glu Thr Gly Ser Leu Val His Leu Glu Asp Pro Glu Arg Glu Ala Leu
385      390                      395                      400
Leu Glu Glu Ala Ala Pro Pro Ala Glu Val His Arg Pro Ala Arg Gln
      405                      410                      415
Pro Gln Gln Gly Ser Gly Leu Cys Glu Lys Asp Val Lys Lys Lys Leu
      420                      425                      430
Glu Phe Gly Ser Pro Lys Gly Arg Ser Gly Ser Leu Leu Gln Val Glu
      435                      440                      445
Glu Thr Glu Arg Glu Glu Gly Leu Gly Ala Gly Arg Trp Gly Gln Leu
      450                      455                      460
Pro Thr Gln Leu Asp Gln Asn Leu Leu Asn Ser Glu Asn Leu Asn Asn
465      470                      475                      480
Asn Ser Lys Arg Ser Cys Pro Asn Gly Met Glu Val Gly Arg Ala Arg
      485                      490                      495
Pro Ala Gly Trp His Thr Pro Ser Leu Pro Ser His Ser Asn Trp Pro
      500                      505                      510
Thr Ser Ala Ser Val Val Gly Thr Thr Gly Thr Arg His His Thr Gln
      515                      520                      525
Leu Ile Phe Phe Tyr Cys Leu Leu Trp Ala Pro Ser Ser His Leu Gln
      530                      535                      540
Gly Pro Glu Gly Ser Phe Thr Gly
545                      550

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<210> 3
<211> 21
<212> PRT
<213> Homo sapien

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<400> 3
Cys Leu Val His Cys Lys Met Gly Val Ser Arg Ser Ala Ser Thr Val
  1           5           10           15
Ile Ala Tyr Ala Met
      20

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<210> 4
<211> 24
<212> PRT
<213> Artificial Sequence

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<220>
<223> Derived from the alignment of nine particular
      human DSPs having MAP-kinase phosphatase activity

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<400> 4
Asn Gly Arg Val Leu Val His Cys Gln Ala Gly Ile Ser Arg Ser Gly
  1           5           10           15
Thr Asn Ile Leu Ala Tyr Leu Met
      20

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<210> 5

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<211> 1711
 <212> DNA
 <213> Homo sapiens

<400> 5

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tggcccgcga gaggaaggcg cccctcgctt gcacctgcag cctcgggtggc cccgacatga      180
ttccttactt ctccgccaac gcggtcatct cgcagaacgc catcaaccag ctcatcagcg      240
agagctttct aactgtcaaa ggtgctgccc tttttctacc acggggaaat ggctcatcca      300
caccaagaat cagccacaga cggacaagc atgcaggcga tctccaacag catctccaag      360
caatgttcat ttactccgc ccagaagaca acatcaggct ggctgtaaga ctggaaagta      420
cttaccagaa tcgaacacgc tatatggtag tggtttcaac taatggtaga caagacactg      480
aagaaagcat cgtccttaga atggatttct cctctaataa cagtagcact tgtaccatgg      540
gcttagtttt gcctctctgg agcgacacgc taattcattt ggatgggatg ggtgggttca      600
gtgtatcgac ggataacaga gttcacatat tcaaacctgt atctgtgcag gcaatgtggg      660
ctgactacac gagcttacac aaggcttggt aagtcgccag agcgcataac tactaccag      720
gcagcctatt tctcacttgg gtgagttatt atgagagcca tatcaactca gatcaatcct      780
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tcttcaccga catacctact gaacgtgaac gaacagaaag gctaattaaa accaaattaa      900
gggagatcat gatgcagaag gatttggaga atattacatc caaagagata agaacagagt      960
tggaaatgca aatgggtgtgc aacttgccgg aattcaagga atttatagac aatgaaatga     1020
tagtgatcct tgggtcaaag gatagcccta cacagatatt tgagcatgtg ttcctgggct     1080
cagaatggaa tgcctccaac ttagaggact tacagaaccg aggggtacgg tatatcttga     1140
atgtcactcg agagatagat aacttcttcc caggagtctt tgagtatcat aacattcggg     1200
tatatgatga agaggcaacg gatctcctgg cgtactggaa tgacacttac aaattcatct     1260
ctaaagcaaa gaaacatgga tctaaatgcc ttgtgactcg caaaatgggg gtgagtcgct     1320
cagcctccac cgtgattgcc tatgcaatga aggaatatgg ctggaatctg gaccgagcct     1380
atgactatgt gaaagaaaga cgaacggtaa ccaagcccaa cccaagcttc atgagacaac     1440
tggaagagta tcaggggatc ttgctggcaa gcttcctagg cttgattcat ggagggaggg     1500
acaagccctg gggagagaaa agcacagaat ttgagtcagt agatctgggt tccattcctg     1560
gttcaccctc ttgctgcaac cctgagaagt tacttcacat ttctcatcct taactgaccc     1620
catctataaa atgaaaatca agagatccat ctcacagggt tattgtgaat aaaaatgtgt     1680
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<210> 6
 <211> 509
 <212> PRT
 <213> Homo sapiens

<400> 6

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Met Thr Leu Ser Thr Leu Ala Arg Lys Arg Lys Ala Pro Leu Ala Cys
  1          5          10          15
Thr Cys Ser Leu Gly Gly Pro Asp Met Ile Pro Tyr Phe Ser Ala Asn
          20          25          30
Ala Val Ile Ser Gln Asn Ala Ile Asn Gln Leu Ile Ser Glu Ser Phe
          35          40          45
Leu Thr Val Lys Gly Ala Ala Leu Phe Leu Pro Arg Gly Asn Gly Ser
          50          55          60
Ser Thr Pro Arg Ile Ser His Arg Arg Asn Lys His Ala Gly Asp Leu
          65          70          75          80
Gln Gln His Leu Gln Ala Met Phe Ile Leu Leu Arg Pro Glu Asp Asn
          85          90          95
Ile Arg Leu Ala Val Arg Leu Glu Ser Thr Tyr Gln Asn Arg Thr Arg
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			100					105				110			
Tyr	Met	Val	Val	Val	Ser	Thr	Asn	Gly	Arg	Gln	Asp	Thr	Glu	Glu	Ser
		115					120					125			
Ile	Val	Leu	Gly	Met	Asp	Phe	Ser	Ser	Asn	Asp	Ser	Ser	Thr	Cys	Thr
		130				135					140				
Met	Gly	Leu	Val	Leu	Pro	Leu	Trp	Ser	Asp	Thr	Leu	Ile	His	Leu	Asp
145					150				155						160
Gly	Asp	Gly	Gly	Phe	Ser	Val	Ser	Thr	Asp	Asn	Arg	Val	His	Ile	Phe
				165					170						175
Lys	Pro	Val	Ser	Val	Gln	Ala	Met	Trp	Ser	Ala	Leu	Gln	Ser	Leu	His
			180					185						190	
Lys	Ala	Cys	Glu	Val	Ala	Arg	Ala	His	Asn	Tyr	Tyr	Pro	Gly	Ser	Leu
		195					200					205			
Phe	Leu	Thr	Trp	Val	Ser	Tyr	Tyr	Glu	Ser	His	Ile	Asn	Ser	Asp	Gln
		210				215					220				
Ser	Ser	Val	Asn	Glu	Trp	Asn	Ala	Met	Gln	Asp	Val	Gln	Ser	His	Arg
225					230					235					240
Pro	Asp	Ser	Pro	Ala	Leu	Phe	Thr	Asp	Ile	Pro	Thr	Glu	Arg	Glu	Arg
				245					250						255
Thr	Glu	Arg	Leu	Ile	Lys	Thr	Lys	Leu	Arg	Glu	Ile	Met	Met	Gln	Lys
			260					265						270	
Asp	Leu	Glu	Asn	Ile	Thr	Ser	Lys	Glu	Ile	Arg	Thr	Glu	Leu	Glu	Met
		275				280					285				
Gln	Met	Val	Cys	Asn	Leu	Arg	Glu	Phe	Lys	Glu	Phe	Ile	Asp	Asn	Glu
		290			295						300				
Met	Ile	Val	Ile	Leu	Gly	Gln	Met	Asp	Ser	Pro	Thr	Gln	Ile	Phe	Glu
305				310					315						320
His	Val	Phe	Leu	Gly	Ser	Glu	Trp	Asn	Ala	Ser	Asn	Leu	Glu	Asp	Leu
			325					330						335	
Gln	Asn	Arg	Gly	Val	Arg	Tyr	Ile	Leu	Asn	Val	Thr	Arg	Glu	Ile	Asp
			340					345				350			
Asn	Phe	Phe	Pro	Gly	Val	Phe	Glu	Tyr	His	Asn	Ile	Arg	Val	Tyr	Asp
		355				360						365			
Glu	Glu	Ala	Thr	Asp	Leu	Leu	Ala	Tyr	Trp	Asn	Asp	Thr	Tyr	Lys	Phe
		370				375					380				
Ile	Ser	Lys	Ala	Lys	Lys	His	Gly	Ser	Lys	Cys	Leu	Val	His	Cys	Lys
385				390						395					400
Met	Gly	Val	Ser	Arg	Ser	Ala	Ser	Thr	Val	Ile	Ala	Tyr	Ala	Met	Lys
				405					410					415	
Glu	Tyr	Gly	Trp	Asn	Leu	Asp	Arg	Ala	Tyr	Asp	Tyr	Val	Lys	Glu	Arg
			420					425					430		
Arg	Thr	Val	Thr	Lys	Pro	Asn	Pro	Ser	Phe	Met	Arg	Gln	Leu	Glu	Glu
		435				440						445			
Tyr	Gln	Gly	Ile	Leu	Leu	Ala	Ser	Phe	Leu	Gly	Leu	Ile	His	Gly	Gly
		450				455					460				
Arg	Asp	Lys	Pro	Trp	Gly	Glu	Lys	Ser	Thr	Glu	Phe	Glu	Ser	Val	Asp
465				470						475					480
Leu	Val	Ser	Ile	Pro	Gly	Ser	Pro	Ser	Cys	Cys	Asn	Pro	Glu	Lys	Leu
				485					490						495
Leu	His	Ile	Ser	His	Pro	Tyr	Leu	Thr	Pro	Ser	Ile	Lys			
			500					505							

<210> 7

<211> 1052

<212> DNA

<213> Homo sapiens

<400> 7

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tctttctttc ccatttaaga ataatcgta ttaagaatat cgtttaagaa taatcgttat      180
ttctctcttc tcagacctac tgaacgtgaa cgaacagaaa ggctaattaa aaccaaatta      240
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ttggaaatgc aaatggtgtg caacttgcgg gaattcaagg aatttataga caatgaaatg      360
atagtgatcc ttggtcaaat ggatagccct acacagatat ttgagcatgt gttcctgggc      420
tcagaatgga atgcctccaa cttagaggac ttacagaacc gaggggtacg gtatatcttg      480
aatgtcactc gagagataga taacttcttc ccaggagtct ttgagtatca taacattcgg      540
gtatatgatg aagaggcaac ggatctcctg gcgtactgga atgacactta caaatcctc      600
tctaaagcaa agaaacatgg atctaaatgc cttgtgcact gcaaaatggg ggtgagtcgc      660
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tatgactatg tgaagaaaag acgaacggta accaagccca acccaagctt catgagacaa      780
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gggttcaccct cttgctgcaa ccctgagaag ttacttcaca tttctcatcc ttacctgacc      960
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tttgaatgtt tataaaaaaa aaaaaaaaaa aa                                1052

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<210> 8

<211> 241

<212> PRT

<213> Homo sapiens

<400> 8

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 20          25          30
Ile Asp Asn Glu Met Ile Val Ile Leu Gly Gln Met Asp Ser Pro Thr
 35          40          45
Gln Ile Phe Glu His Val Phe Leu Gly Ser Glu Trp Asn Ala Ser Asn
 50          55          60
Leu Glu Asp Leu Gln Asn Arg Gly Val Arg Tyr Ile Leu Asn Val Thr
 65          70          75          80
Arg Glu Ile Asp Asn Phe Phe Pro Gly Val Phe Glu Tyr His Asn Ile
 85          90          95
Arg Val Tyr Asp Glu Glu Ala Thr Asp Leu Leu Ala Tyr Trp Asn Asp
 100         105         110
Thr Tyr Lys Phe Ile Ser Lys Ala Lys Lys His Gly Ser Lys Cys Leu
 115         120         125
Val His Cys Lys Met Gly Val Ser Arg Ser Ala Ser Thr Val Ile Ala
 130         135         140
Tyr Ala Met Lys Glu Tyr Gly Trp Asn Leu Asp Arg Ala Tyr Asp Tyr
 145         150         155         160
Val Lys Glu Arg Arg Thr Val Thr Lys Pro Asn Pro Ser Phe Met Arg
 165         170         175
Gln Leu Glu Glu Tyr Gln Gly Ile Leu Leu Ala Ser Phe Leu Gly Leu
 180         185         190
Ile His Gly Gly Arg Asp Lys Pro Trp Gly Glu Lys Ser Thr Glu Phe

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<210> 13
<211> 27
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<212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 13
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<210> 14
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 <212> DNA
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<220>
 <223> Primer

<400> 14
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<210> 15
 <211> 28
 <212> DNA
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<220>
 <223> Primer

<400> 15
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<210> 16
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
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<400> 16
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<210> 17
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 17
 ctcttcagc tgtctcatga agcttgggtt ggg 33

<210> 18

<211> 37
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 18
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<210> 19
 <211> 44
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 19
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<210> 20
 <211> 28
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 20
 tgaattcccg caagttgcac accatttg 28

<210> 21
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 21
 ggaatatggc tggaatctgg accgagccta tga 33

<210> 22
 <211> 34
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 22
 tgtgaaagaa agacgaacgg taaccaagcc caac 34

<210> 23
 <211> 170
 <212> PRT
 <213> Homo sapiens

<400> 23
 Ser Asp Leu Asp Arg Asp Pro Asn Ser Ala Thr Asp Ser Asp Gly Ser
 1 5 10 15
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 20 25 30
 Leu Tyr Leu Gly Cys Ala Lys Asp Ser Thr Asn Leu Asp Val Leu Glu
 35 40 45
 Glu Phe Gly Ile Lys Tyr Ile Leu Asn Val Thr Pro Asn Leu Pro Asn
 50 55 60
 Leu Phe Glu Asn Ala Gly Glu Phe Lys Tyr Lys Gln Ile Pro Ile Ser
 65 70 75 80
 Asp His Trp Ser Gln Asn Leu Ser Gln Phe Phe Pro Glu Ala Ile Ser
 85 90 95
 Phe Ile Asp Glu Ala Arg Gly Lys Asn Cys Gly Val Leu Val His Cys
 100 105 110
 Leu Ala Gly Ile Ser Arg Ser Val Thr Val Thr Val Ala Tyr Leu Met
 115 120 125
 Gln Lys Leu Asn Leu Ser Met Asn Asp Ala Tyr Asp Ile Val Lys Met
 130 135 140
 Lys Lys Ser Asn Ile Ser Pro Asn Phe Asn Phe Met Gly Gln Leu Leu
 145 150 155 160
 Asp Phe Glu Arg Thr Leu Gly Leu Ser Ser
 165 170

<210> 24
 <211> 168
 <212> PRT
 <213> Homo sapiens

<400> 24
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 Pro Ser Ser Gln Pro Ala Phe Pro Val Gln Ile Leu Pro Tyr Leu Tyr
 20 25 30
 Leu Gly Cys Ala Lys Asp Ser Thr Asn Leu Asp Val Leu Gly Lys Tyr
 35 40 45
 Gly Ile Lys Tyr Ile Leu Asn Val Thr Pro Asn Leu Pro Asn Ala Phe
 50 55 60
 Glu His Gly Gly Glu Phe Thr Tyr Lys Gln Ile Pro Ile Ser Asp His
 65 70 75 80
 Trp Ser Gln Asn Leu Ser Gln Phe Phe Pro Glu Ala Ile Ser Phe Ile
 85 90 95
 Asp Glu Ala Arg Ser Lys Lys Cys Gly Val Leu Val His Cys Leu Ala
 100 105 110
 Gly Ile Ser Arg Ser Val Thr Val Thr Val Ala Tyr Leu Met Gln Lys
 115 120 125
 Met Asn Leu Ser Leu Asn Asp Ala Tyr Asp Phe Val Lys Arg Lys Lys
 130 135 140
 Ser Asn Ile Ser Pro Asn Phe Asn Phe Met Gly Gln Leu Leu Asp Phe

145 150 155 160
 Glu Arg Thr Leu Gly Leu Ser Ser
 165

<210> 25
 <211> 157
 <212> PRT
 <213> Homo sapiens

<400> 25
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 1 5 10 15
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 20 25 30
 Glu Ser Leu Ala Lys Leu Gly Ile Arg Tyr Ile Leu Asn Val Thr Pro
 35 40 45
 Asn Leu Pro Asn Phe Phe Glu Lys Asn Gly Asp Phe His Tyr Lys Gln
 50 55 60
 Ile Pro Ile Ser Asp His Trp Ser Gln Asn Leu Ser Arg Phe Phe Pro
 65 70 75 80
 Glu Ala Ile Glu Phe Ile Asp Glu Ala Leu Ser Gln Asn Cys Gly Val
 85 90 95
 Leu Val His Cys Leu Ala Gly Val Ser Arg Ser Val Thr Val Thr Val
 100 105 110
 Ala Tyr Leu Met Gln Lys Leu His Leu Ser Leu Asn Asp Ala Tyr Asp
 115 120 125
 Leu Val Lys Arg Lys Lys Ser Asn Ile Ser Pro Asn Phe Asn Phe Met
 130 135 140
 Gly Gln Leu Leu Asp Phe Glu Arg Ser Leu Arg Leu Glu
 145 150 155

<210> 26
 <211> 170
 <212> PRT
 <213> Homo sapiens

<400> 26
 Gly Leu Cys Glu Gly Lys Pro Ala Ala Leu Leu Pro Met Ser Leu Ser
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 Gln Pro Cys Leu Pro Val Pro Ser Val Gly Leu Thr Arg Ile Leu Pro
 20 25 30
 His Leu Tyr Leu Gly Ser Gln Lys Asp Val Leu Asn Lys Asp Leu Met
 35 40 45
 Thr Gln Asn Gly Ile Ser Tyr Val Leu Asn Ala Ser Asn Ser Cys Pro
 50 55 60
 Lys Pro Asp Phe Ile Cys Glu Ser Arg Phe Met Arg Val Pro Ile Asn
 65 70 75 80
 Asp Asn Tyr Cys Glu Lys Leu Leu Pro Trp Leu Asp Lys Ser Ile Glu
 85 90 95
 Phe Ile Asp Lys Ala Lys Leu Ser Ser Cys Gln Val Ile Val His Cys
 100 105 110
 Leu Ala Gly Ile Ser Arg Ser Ala Thr Ile Ala Ile Ala Tyr Ile Met
 115 120 125
 Lys Thr Met Gly Met Ser Ser Asp Asp Ala Tyr Arg Phe Val Lys Asp

130		135		140
Arg Arg Pro Ser Ile Ser Pro Asn Phe Asn Phe Leu Gly Gln Leu Leu				
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Glu Tyr Glu Arg Thr Leu Lys Leu Leu Ala				160
	165		170	

<210> 27
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 <213> Homo sapiens

<400> 27

Pro Ala Gln Ala Leu Pro Pro Ala Gly Ala Glu Asn Ser Asn Ser Asp				
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Pro Arg Val Pro Ile Tyr Asp Gln Gly Pro Val Glu Ile Leu Pro				
	20		25	30
Tyr Leu Tyr Leu Gly Ser Cys Asn His Ser Ser Asp Leu Gln Gly Leu				
	35		40	45
Gln Ala Cys Gly Ile Thr Ala Val Leu Asn Val Ser Ala Ser Cys Pro				
	50		55	60
Asn His Phe Glu Gly Leu Phe His Tyr Lys Ser Ile Pro Val Glu Asp				
65	70		75	80
Asn Gln Met Val Glu Ile Ser Ala Trp Phe Gln Glu Ala Ile Ser Phe				
	85		90	95
Ile Asp Ser Val Lys Asn Ser Gly Gly Arg Val Leu Val His Cys Gln				
	100		105	110
Ala Gly Ile Ser Arg Ser Ala Thr Ile Cys Leu Ala Tyr Leu Ile Gln				
	115		120	125
Ser His Arg Val Arg Leu Asp Glu Ala Phe Asp Phe Val Lys Gln Arg				
	130		135	140
Arg Gly Val Ile Ser Pro Asn Phe Ser Phe Met Gly Gln Leu Leu Gln				
145	150		155	160
Leu Glu Thr Gln Val Leu Cys His				
	165			

<210> 28
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 <212> PRT
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<400> 28

Pro Leu Ser Thr Ser Val Pro Asp Ser Ala Glu Ser Gly Cys Ser Ser				
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Cys Ser Thr Pro Leu Tyr Asp Gln Gly Gly Pro Val Glu Ile Leu Pro				
	20		25	30
Phe Leu Tyr Leu Gly Ser Ala Tyr His Ala Ser Arg Lys Asp Met Leu				
	35		40	45
Asp Ala Leu Gly Ile Thr Ala Leu Ile Asn Val Ser Ala Asn Cys Pro				
	50		55	60
Asn His Phe Glu Gly His Tyr Gln Tyr Lys Ser Ile Pro Val Glu Asp				
65	70		75	80
Asn His Lys Ala Asp Ile Ser Ser Trp Phe Asn Glu Ala Ile Asp Phe				
	85		90	95
Ile Asp Ser Ile Lys Asn Ala Gly Gly Arg Val Phe Val His Cys Gln				

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          100                      105                      110
Ala Gly Ile Ser Arg Ser Ala Thr Ile Cys Leu Ala Tyr Leu Met Arg
          115                      120                      125
Thr Asn Arg Val Lys Leu Asp Glu Ala Phe Glu Phe Val Lys Gln Arg
          130                      135                      140
Arg Ser Ile Ile Ser Pro Asn Phe Ser Phe Met Gly Gln Leu Leu Gln
145                      150                      155                      160
Phe Glu Ser Gln Val Leu Ala Pro His
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 <213> Homo sapiens

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Pro Val Pro Pro Ser Ala Thr Glu Pro Leu Asp Leu Gly Cys Ser Ser
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Cys Gly Thr Pro Leu His Asp Gln Gly Gly Pro Val Glu Ile Leu Pro
          20          25          30
Phe Leu Tyr Leu Gly Ser Ala Tyr His Ala Ala Arg Arg Asp Met Leu
          35          40          45
Asp Ala Leu Gly Ile Thr Ala Leu Leu Asn Val Ser Ser Asp Cys Pro
          50          55          60
Asn His Phe Glu Gly His Tyr Gln Tyr Lys Cys Ile Pro Val Glu Asp
65          70          75          80
Asn His Lys Ala Asp Ile Ser Ser Trp Phe Met Glu Ala Ile Glu Tyr
          85          90          95
Ile Asp Ala Val Lys Asp Cys Arg Gly Arg Val Leu Val His Cys Gln
          100          105          110
Ala Gly Ile Ser Arg Ser Ala Thr Ile Cys Leu Ala Tyr Leu Met Met
          115          120          125
Lys Lys Arg Val Arg Leu Glu Glu Ala Phe Glu Phe Val Lys Gln Arg
          130          135          140
Arg Ser Ile Ile Ser Pro Asn Phe Ser Phe Met Gly Gln Leu Leu Gln
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Phe Glu Ser Gln Val Leu Ala Thr Ser
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Ser Glu Arg Ala Leu Ile Ser Gln Cys Gly Lys Pro Val Val Asn Val
 1          5          10          15
Ser Tyr Arg Pro Ala Tyr Asp Gln Gly Gly Pro Val Glu Ile Leu Pro
          20          25          30
Phe Leu Tyr Leu Gly Ser Ala Tyr His Ala Ser Lys Cys Glu Phe Leu
          35          40          45
Ala Asn Leu His Ile Thr Ala Leu Leu Asn Val Ser Arg Arg Thr Ser
          50          55          60
Glu Ala Cys Met Thr His Leu His Tyr Lys Trp Ile Pro Val Glu Asp

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65          70          75          80
Ser His Thr Ala Asp Ile Ser Ser His Phe Gln Glu Ala Ile Asp Phe
                        85          90          95
Ile Asp Cys Val Arg Glu Lys Gly Gly Lys Val Leu Val His Cys Glu
                        100         105         110
Ala Gly Ile Ser Arg Ser Pro Thr Ile Cys Met Ala Tyr Leu Met Lys
                        115         120         125
Thr Lys Gln Phe Arg Leu Lys Glu Ala Phe Asp Tyr Ile Lys Gln Arg
                        130         135         140
Arg Ser Met Val Ser Pro Asn Phe Gly Phe Met Gly Gln Leu Leu Gln
145          150          155          160
Tyr Glu Ser Glu Ile Leu Pro Ser Thr Pro Asn
                        165         170

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<210> 31
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Gln Met Asn Cys Asn Leu Lys Glu Leu Lys Glu Phe Ile Asp Asn Glu
 1          5          10          15
Met Leu Leu Ile Leu Gly Gln Met Asp Lys Pro Ser Leu Ile Phe Asp
                20          25          30
His Leu Tyr Leu Gly Ser Glu Trp Asn Ala Ser Asn Leu Glu Glu Leu
                35          40          45
Gln Gly Ser Gly Val Asp Tyr Ile Leu Asn Val Thr Arg Glu Ile Asp
50          55          60
Asn Phe Phe Pro Gly Leu Phe Ala Tyr His Asn Ile Arg Val Tyr Asp
65          70          75          80
Glu Glu Thr Thr Asp Leu Leu Ala His Trp Asn Glu Ala Tyr His Phe
                        85          90          95
Ile Asn Lys Ala Lys Arg Asn His Ser Lys Cys Leu Val His Cys Lys
                        100         105         110
Met Gly Val Ser Arg Ser Ala Ser Thr Val Ile Ala Tyr Ala Met Lys
                        115         120         125
Glu Phe Gly Trp Pro Leu Glu Lys Ala Tyr Asn Tyr Val Lys Gln Lys
130          135         140
Arg Ser Ile Thr Arg Pro Asn Ala Gly Phe Met Arg Gln Leu Ser Glu
145          150          155          160
Tyr Glu Gly Ile Leu Asp Ala Ser Lys Gln
                        165         170

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<210> 32
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<400> 32
Gln Met Val Cys Asn Leu Arg Glu Phe Lys Glu Phe Ile Asp Asn Glu
 1          5          10          15
Met Ile Val Ile Leu Gly Gln Met Asp Ser Pro Thr Gln Ile Phe Glu
                20          25          30
His Val Phe Leu Gly Ser Glu Trp Asn Ala Ser Asn Leu Glu Asp Leu

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<210> 33
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[illegible]

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11025 U.S. PTO

02/05/01

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UTILITY PATENT APPLICATION TRANSMITTAL <i>(Only for new nonprovisional applications under 37 CFR 1.53(b))</i>	Attorney Docket No.	200125.420
	First Inventor	Ralf M. Luche
	Title	DSP-12 AND DSP-13 DUAL-SPECIFICITY PHOSPHATASES
	Express Mail Label No.	EL773171053US


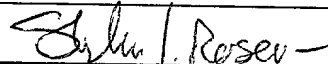
11025 U.S. PTO
09/775925
02/01/01

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2. <input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.	8. <input checked="" type="checkbox"/> Nucleotide and/or Amino Acid Sequence Submission <i>(if applicable, all necessary)</i>
3. <input checked="" type="checkbox"/> Specification [Total Pages <u>56</u>] <i>(preferred arrangement set forth below)</i> - Descriptive title of the Invention - Cross Reference to Related Applications - Statement Regarding Fed sponsored R & D - Reference to sequence listing, a table, or a computer program listing appendix - Background of the Invention - Brief Summary of the Invention - Brief Description of the Drawings <i>(if filed)</i> - Detailed Description - Claim(s) - Abstract of the Disclosure	a. <input checked="" type="checkbox"/> Computer Readable Form (CRF) b. <input checked="" type="checkbox"/> Specification Sequence Listing on: i. <input type="checkbox"/> CD-ROM or CD-R (2 copies); or ii. <input checked="" type="checkbox"/> paper c. <input checked="" type="checkbox"/> Statements verifying identity of above copies
4. <input checked="" type="checkbox"/> Drawing(s) (35 U.S.C. 113) [Total Sheets <u>7</u>]	ACCOMPANYING APPLICATION PARTS 9. <input type="checkbox"/> Assignment Papers (cover sheet & document(s)) 10. <input type="checkbox"/> 37 CFR 3.73(b) Statement <input type="checkbox"/> Power of <i>(when there is an assignee)</i> Attorney 11. <input type="checkbox"/> English Translation Document <i>(if applicable)</i> 12. <input type="checkbox"/> Information Disclosure <input type="checkbox"/> Copies of IDS Statement (IDS)/PTO-1449 Citations 13. <input type="checkbox"/> Preliminary Amendment 14. <input checked="" type="checkbox"/> Return Receipt Postcard (MPEP 503) <i>Should be specifically itemized)</i> 15. <input type="checkbox"/> Certified Copy of Priority Document(s) <i>(if foreign priority is claimed)</i> 16. <input type="checkbox"/> Request and Certification under 35 U.S.C. Applicant must attach form 122(b)(2)(B)(i). PTO/SB/35 or its equivalent. 17. <input checked="" type="checkbox"/> Other: <u>Certificate of Mailing by Express Mail</u>
5. Oath or Declaration [Total Sheets _____] a. <input type="checkbox"/> Newly executed (original or copy) b. <input type="checkbox"/> Copy from a prior application (37 CFR 1.63 (d)) <i>(for a continuation/divisional with Box 18 completed)</i> i. <input type="checkbox"/> DELETION OF INVENTOR(S) Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).	
6. <input type="checkbox"/> Application Data Sheet. See 37 CFR 1.76	

18. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment, or in an Application Data Sheet under 37 CFR 1.76

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) ☐ of prior application No. _____ / _____
Prior application information Examiner _____ Group Art Unit: _____

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Telephone	(206) 622-4900	Fax (206) 682-6031	
Name (Print/Type)	Stephen J. Rosenman, Ph.D.	Registration No. (Attorney/Agent)	43,058
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